

IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Cancelled)

2. (Currently Amended) A data transmission method in a telecommunication system, the method comprising: according to claim 1, ~~characterized~~ in that the method comprises steps of

splitting the data to be transmitted into fixed-length payload units provided with payload numbers in order to distinguish the payload units from one another,

inserting one or more payload units into the an information field of each protocol frame of a link protocol provided with a retransmission mechanism,

providing a header field of a protocol frame with payload numbering, which indicates the payload units contained in the information field of the protocol frame,

transmitting the protocol frames frame from the a transmitting end to the a receiving end,

acknowledging payload units which have been received appropriately, requesting ~~for~~ transmission of new payload units or requesting ~~for~~ retransmission of payload units which have not been received appropriately by means of said payload numbers,

using data block numbering in said retransmission mechanism,

changing the length of the protocol frame during a connection, and

inserting the payload units to be retransmitted into one or several protocol frames with a new frame length, said payload units having been transmitted for the first time before the frame length was changed.

3. (Currently Amended) A method according to claim 1, ~~characterized~~ in that the method comprises steps of 2, further comprising:

unpacking the payload units from the protocol frames with the old having a previous frame length and being contained in a retransmission buffer, at the transmitting end after the frame length has been changed.

4. (Currently Amended) A method according to claim 1, ~~characterized in that~~ wherein said link protocol provided with a retransmission mechanism is a layer 2 link protocol, ~~such as a radio link protocol (RLP), a link access control (LAC) protocol or a radio link control protocol (RLCP), or a protocol situated below them~~ a layer 2 link protocol, such as medium access control (MAC).

5. (Currently Amended) A method according to claim 1, ~~characterized by~~ 2, further comprising:

indicating in the header of the protocol frame in a normal situation the payload number of only one payload unit contained in the information field, and

indicating in the header of the protocol frame the payload number of every payload unit in the information field individually, when payload units with unsuccesive numbers are retransmitted in the protocol frame in a special situation.

6. (Currently Amended) A method according to claim 5, ~~characterized by~~ further comprising:

indicating said individual payload numbers in a frame header extension at the beginning of said information field.

7. (Currently Amended) A method according to claim 5, ~~characterized in that~~ wherein said special situation is a change in the data rate.

8. (Currently Amended) A data transmission method in a mobile communication system comprising a mobile services switching centre with a first link protocol having a fixed frame length, the first link protocol provided with a retransmission mechanism for non-transparent data transmission; a radio access network with a second link protocol provided with a retransmission mechanism for non-transparent data transmission, ~~the~~ a frame length of the second protocol being variable or ~~the~~ a frame thereof being longer than ~~the~~ a frame of the first protocol; and an interworking unit via which the radio access network is connected to the mobile services switching centre, the method comprising: ~~steps of~~

transmitting data in frames of the first link protocol between the interworking unit and the mobile services switching centre,

using frame numbering in said retransmission mechanism of the first link protocol between the interworking unit and the mobile services switching centre,

transmitting data in frames of the second link protocol between the mobile station and the interworking unit,

~~characterized by~~

transmitting data in the information fields of the second link protocol frames in the form of data blocks which are numbered, the length of each of said data ~~block~~ blocks being equal to the length of the information field of ~~the a~~ a first link protocol frame, and

using said data block numbering in said retransmission mechanism of the second link protocol between the interworking unit and the mobile station, said data block numbering being directly compatible with the frame numbering used between the interworking unit and the mobile services switching centre.

9. (Currently Amended) A data transmission method in a mobile communication system comprising a mobile services switching centre with a first link protocol having a fixed frame length, the first link protocol provided with a retransmission mechanism for non-transparent data transmission; a radio access network with a second link protocol provided with a retransmission mechanism for non-transparent data transmission, the frame length of the second protocol being variable; and an interworking unit via which the radio access network is connected to the mobile services switching centre, the method comprising: ~~steps of~~

transmitting data in frames of the first link protocol between the interworking unit and the mobile services switching centre,

transmitting data in frames of the second link protocol between the mobile station and the interworking unit,

~~characterized by~~

transmitting data in ~~the~~ information fields of the second link protocol frames in the form of data blocks which are numbered,

selecting ~~the a~~ a length of ~~the a~~ a data block such that the frame length of the second link protocol is equal to or smaller than the length of the first link protocol frame or information field,

transmitting the frames of the second link protocol in place of the frames of the first link protocol or in the information fields thereof between the interworking unit and the mobile services switching centre, and

using said data block numbering in the retransmission mechanism ~~according to~~ of the second link protocol over ~~the~~ an entire connection between the mobile station and the mobile services switching centre.

10. (Cancelled)

11. (Currently Amended) A telecommunication system according to claim 10,  
~~characterized in that~~ comprising a transmitter and a receiver and a link protocol  
provided with a retransmission mechanism, the transmitter and the receiver being arranged to  
transmit data in frames of the link protocol from a transmitting end to a receiving end,  
wherein the data is placed in information fields of the protocol frames in fixed-length data  
blocks which are numbered, and said retransmission mechanism is arranged to utilize said  
data block numbering, and the length of a protocol frame can be changed during a  
connection, and the transmitter is arranged to insert payload units to be retransmitted into one  
or several protocol frames with a new frame length in response to the changing of the frame  
length, said payload units having been transmitted for the first time before the frame length  
was changed, and wherein the information field of each protocol frame comprises one or  
more data blocks (62) and ~~that~~ a header field (H) of a protocol frame is provided with  
payload numbering indicating the payload units in the information field of the protocol frame.

12. (Currently Amended) A system according to claim 10, ~~characterized~~  
~~in that~~ 11, wherein the receiver (Rx) is arranged to acknowledge appropriately received  
payload units (62), to request ~~for~~ transmission of new payload units or to request ~~for~~  
retransmission of inappropriately received payload units by means of said payload numbers.

13. (Currently Amended) A system according to claim 10, ~~characterized~~  
~~in that~~ 11, wherein the transmitter (Tx) is arranged to unpack ~~the~~ payload units from ~~the~~  
protocol frames ~~with the old~~ having a previous frame length and being contained in the a  
retransmission buffer, in response to the changing of the frame length.

14. (Currently Amended) A system according to claim 10, ~~characterized in that~~ 11, wherein said link protocol provided with a retransmission mechanism is a layer 2 link protocol, ~~such as a radio link protocol (RLP), a link access control (LAC) protocol or a radio link control protocol (RLCP), or a protocol situated below a layer 2 link protocol~~ them, ~~such as medium access control (MAC).~~

15. (Currently Amended) A system according to claim 10, ~~characterized in that~~ 11, wherein the length of ~~the~~ a payload unit (62) can be obtained either directly or indirectly from inband or outband signalling.

16. (Currently Amended) A system according to claim 10, ~~characterized in that~~ 11, wherein the length of ~~the~~ a payload unit (62) can be negotiated at the beginning of the connection and/or during the connection.

17. (Currently Amended) A system according to claim 10, ~~characterized in that~~ 11, wherein

the header of the protocol frame normally contains the payload number of one payload unit in the information field, and

the header of the protocol frame contains the individual payload number of each payload unit in the information field when payload units with unsucessive numbers are retransmitted in the protocol frame in a special situation, ~~which is, for example, a change in the data rate.~~

18. (Currently Amended) A system according to claim 17, ~~characterized in that~~ wherein the header of the protocol frame can be extended to the beginning of the information field in order to indicate said individual payload numbers.

19. (Currently Amended) A mobile communication system comprising a mobile services switching centre (MSC) with a first link protocol (RLP) provided with a fixed frame length and a retransmission mechanism utilizing frame numbering for non-transparent data transmission; a radio access network (RAN) with a second link protocol (LAC) provided with a retransmission mechanism for non-transparent data transmission, ~~the~~ a frame length of the second protocol being variable or ~~the~~ a frame thereof being longer than ~~the~~ a frame of the

first protocol; and an interworking unit (IWU) via which the radio access network (RAN) is connected to the mobile services switching centre (MSC) such that a transmission link is provided between a mobile station (MS) and the mobile services switching centre (MSC) via the radio access network (RAN), the transmission link comprising a first leg between the interworking unit (IWU) and the mobile services switching centre (MSC) and a second leg between the mobile station (MS) and the interworking unit (IWU), ~~characterized in that~~ wherein the data is situated in the information fields of the second link protocol (LAC) frames in the form of data blocks (62) which are numbered, the length of each of said data block (62) blocks equalling the length of the an information field of the first link protocol (RLP) frame, and ~~that~~ the retransmission mechanism of the second link protocol (LAC) is arranged to use said data block numbering between the interworking unit (IWU) and the mobile station (MS), said data block numbering being directly compatible with the frame numbering used between the interworking unit (IWU) and the mobile services switching centre (MSC).

20. (Currently Amended) A mobile communication system comprising a mobile services switching centre (MSC) with a first link protocol (RLP) having a fixed frame length, provided with a retransmission mechanism for non-transparent data transmission; a radio access network (RAN) with a second link protocol (LAC) provided with a retransmission mechanism for non-transparent data transmission, ~~the~~ a frame length of the second protocol being variable; and an interworking unit (IWU) via which the radio access network (RAN) is connected to the mobile services switching centre (MSC) such that a transmission link is provided between a mobile station (MS) and the mobile services switching centre (MSC) via the radio access network (RAN), the transmission link comprising a first leg between the interworking unit (IWU) and the mobile services switching centre (MSC) and a second leg between the mobile station (MS) and the interworking unit (IWU), ~~characterized in that~~ wherein the mobile station (MS) and the interworking unit (IWU) are arranged to transmit data in the information fields of the second link protocol (LAC) frames in the form of data blocks (62) which are numbered, and ~~that~~ the length of the each data block (62) is such that the frame length of the second link protocol (LAC) is equal to or smaller than ~~the~~ a length of the first link protocol (RLP) frame or information field, and ~~that~~ the interworking unit (IWU) and the mobile services switching centre (MSC) are arranged to transmit the frames of the second link protocol (LAC) in place of the frames of the first link protocol

(RLP) or in the information fields thereof between the interworking unit (IWU) and the mobile services switching centre (MSC), and that the mobile station (MS) and the mobile services switching centre (MSC) are arranged to use said data block numbering in the retransmission mechanism ~~according to~~ of the second link protocol (LAC) over ~~the~~ an entire connection between the mobile station and the mobile services switching centre.

21. (Cancelled)

22. (Currently Amended) A mobile station ~~according to claim 21, characterized in that~~ configured to transmit and receive data in frames of a link protocol provided with a retransmission mechanism, wherein the data is placed in information fields of protocol frames in the form of fixed-length data blocks which are numbered, and said retransmission mechanism is arranged to utilize said data block numbering, and the length of each protocol frame can be changed during a connection, and the mobile station is arranged to insert the data blocks to be retransmitted into one or several protocol frames with a new frame length in response to the changing of the frame length, said data blocks having been transmitted for the first time before the frame length was changed, and wherein the information field of each protocol frame comprises one or more data blocks (62), and that a header field (H) of a protocol frame is provided with payload numbering indicating the data blocks (62) contained in the information field of the protocol frame.

23. (Currently Amended) A mobile station according to claim 21, ~~characterized in that~~ 22, wherein the mobile station (Rx) is arranged to acknowledge appropriately received data blocks, to request ~~for~~ transmission of new data blocks, or to request ~~for~~ retransmission of inappropriately received data blocks.

24. (Currently Amended) A mobile station according to claim 21, ~~characterized in that~~ 22, wherein said link protocol provided with a retransmission mechanism is a layer 2 link protocol, ~~such as a radio link protocol (RLP), a link access control (LAC) protocol or a radio link control protocol (RLCP), or a protocol situated below a layer 2 link protocol~~ them, such as medium access control (MAC).

25. (Currently Amended) A mobile station ~~according to claim 21, characterized in that it is~~ configured to transmit and receive data in frames of a link protocol provided with a retransmission mechanism, wherein the data is placed in information fields of protocol frames in the form of fixed-length data blocks which are numbered, and said retransmission mechanism is arranged to utilize said data block numbering, and the length of each protocol frame can be changed during a connection, and the mobile station is arranged to insert the data blocks to be retransmitted into one or several protocol frames with a new frame length in response to the changing of the frame length, said data blocks having been transmitted for the first time before the frame length was changed, the mobile station being a dual-mode mobile station with ability to operate in two radio systems with different radio interfaces.

26. (Currently Amended) A mobile station ~~according to claim 21, characterized in that~~ configured to transmit and receive data in frames of a link protocol provided with a retransmission mechanism, wherein the data is placed in information fields of protocol frames in the form of fixed-length data blocks which are numbered, and said retransmission mechanism is arranged to utilize said data block numbering, and the length of each protocol frame can be changed during a connection, and the mobile station is arranged to insert the data blocks to be retransmitted into one or several protocol frames with a new frame length in response to the changing of the frame length, said data blocks having been transmitted for the first time before the frame length was changed, and wherein

the header of ~~the~~ a protocol frame normally contains the payload number of one payload unit situated in the information field, and

the header of the protocol frame contains the individual payload number of each payload unit in the information field when payload units with unsuccessive numbers are retransmitted in the protocol frame in a special situation, ~~which is, for example, a change in the data rate.~~

27. (New) A method according to claim 4, wherein the layer 2 link protocol is a radio link protocol, a link access control protocol or a radio link control protocol.



28. (New) A method according to claim 4, wherein the protocol situated below a layer 2 link protocol is medium access control.